

**IN THE UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS**

KONINKLIJKE PHILIPS N.V. AND  
PHILIPS LIGHTING NORTH AMERICA  
CORPORATION,

Plaintiffs,

v.

WANGS ALLIANCE CORPORATION d/b/a  
WAC LIGHTING CO.,

Defendant.

CIVIL ACTION NO. 14-cv-12298-GAO

**PHILIPS' OPENING CLAIM CONSTRUCTION BRIEF**

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## I. INTRODUCTION

Plaintiffs Koninklijke Philips N.V. and Philips Lighting North America Corporation (collectively, “Philips”), the owners of the patents-in-suit, submit this brief in support of its proposed constructions for the disputed claim terms. Philips’ constructions (*see Ex.*<sup>1</sup> 1) are supported by the understanding of those of ordinary skill in the art at the time of the invention and the patents’ disclosures and prosecution histories. In contrast, WAC’s constructions (*see Ex.* 2) are not. WAC seeks to broaden or narrow the proper scope of the asserted claims by adding or removing limitations that are either improperly imported from the specification, in conflict with the specification, or inconsistent with the understanding of those of skill in the art. WAC also advances indefiniteness arguments, even though the terms would be readily understood by those of ordinary skill, as explained below. WAC’s unsupported constructions and improper indefiniteness arguments should be rejected, and Philips’ constructions should be adopted.<sup>2</sup>

## II. STATEMENT OF LAW

Claim terms are generally given their “ordinary and customary meaning,” i.e., “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). One of ordinary skill is deemed to read the term in the context of the entire patent, including the specification and the prosecution history. *Id.* at 1313. Courts may also consider extrinsic evidence, i.e., evidence external to the patent and prosecution history, to construe the terms. *Id.* at 1318-19; *Iovate Health Scis., Inc. v. Bio-Engineered Supplements & Nutrition, Inc.*, No. 9:07-CV-46, 2008 WL 859162, at \*7 (E.D. Tex. Mar. 28, 2008) (“While dictionaries and textbooks

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<sup>1</sup> Exhibits referred to herein as “Ex. \_\_” are attached to the Declaration of Denise W. DeFranco in Support of Philips’ Opening Claim Construction Brief submitted herewith.

<sup>2</sup> The parties dispute the construction of terms in U.S. Patent Nos. 6,013,988; 6,147,458; 6,561,690; 6,586,890; 6,788,011; 7,038,399; and 7,352,138. *See* Exs. 3-9.

are extrinsic evidence, their unbiased assertions are more likely to be reliable than the unsubstantiated conclusions of an expert testifying on behalf of a party.”); *cf. Phillips*, 415 F.3d at 1322-23 (stating that judges may “rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents”).

A claim element may be expressed in so-called means-plus-function format. If expressed in that format, the claim element must be construed according to 35 U.S.C. § 112(f) (formerly § 112, ¶ 6), which provides that the claim “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” This claim format allows the claim drafter to define a claim feature in terms of its function (e.g., “means for [function]”), rather than its structure. The scope of a means-plus-function limitation is defined by the corresponding structure described in the specification and equivalents thereof. The Federal Circuit explains:

The first step in construing a means-plus-function limitation is to identify the function explicitly recited in the claim. The next step is to identify the corresponding structure set forth in the written description that performs the particular function set forth in the claim. Section 112 paragraph 6 does not permit incorporation of structure from the written description beyond that necessary to perform the claimed function. Structural features that do not actually perform the recited function do not constitute corresponding structure and thus do not serve as claim limitations.

*Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1369-70 (Fed. Cir. 2001) (citations and internal quotation marks omitted); *see also Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1308 (Fed. Cir. 1998). The Federal Circuit further explained that the “corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, not merely enable the pertinent structure to operate as intended.”

*Asyst Techs.*, 268 F.3d at 1371; *see also Acromed Corp. v. Sofamor Danek Grp., Inc.*, 253 F.3d

1371, 1382 (Fed. Cir. 2001) (stating it was impermissible to import into the claim features of an embodiment that are “unnecessary to perform the claimed function”).

When a limitation uses the word “means,” it creates a presumption that the limitation invokes § 112(f). *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703 (Fed. Cir. 1998). This presumption, however, does not apply in two situations: (1) “[if] a claim element . . . uses the word ‘means’ but recites no function corresponding to the means”; or (2) “even if the claim element specifies a function, if it also recites sufficient structure or material for performing that function.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1347 (Fed. Cir. 2002). Thus, the “mere use of the word ‘means’ after a limitation, without more, does not suffice to make that limitation a means-plus-function limitation.” *Id.* (citing *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996)); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1427 (Fed. Cir. 1997).

Claims are also presumed valid. 35 U.S.C. § 282. Although claims must be definite under 35 U.S.C. § 112(b) by “particularly pointing out and distinctly claiming” the invention, any facts supporting a finding of invalidity due to indefiniteness must be proved by clear and convincing evidence. *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed. Cir. 2001). Absolute precision and clarity in the claim language is not required. Indeed, the Supreme Court has recognized that some “modicum of uncertainty” is the “price of ensuring the appropriate incentives for innovation.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2128 (2014) (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 732 (2002)). Therefore, claim language is only indefinite if, when read in light of the specification and prosecution history, it “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 134 S. Ct. at 2124.

### **III. ARGUMENT**

#### **A. WAC’s Indefiniteness Arguments Should Be Rejected**

WAC forgoes the opportunity to propose constructions for some ten claim terms, arguing instead that the terms are “indefinite” and/or that a “construction is not possible.” *See* Ex. 2. WAC’s indefiniteness arguments lack merit. Some of the terms that WAC contends are “indefinite” are so basic that they do not even require construction (e.g., “at least in part”). Ex. 2 at 7. And the means-plus-function terms that WAC challenges as indefinite can readily be construed as instructed by § 112(f) of the patent statute. *See, e.g., Budde*, 250 F.3d at 1376-77 (“[A] challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.”). Thus, WAC fails to prove indefiniteness.

WAC argues that constructions for certain terms are “not possible,” but as explained below, Philips provided constructions for these terms that are fully supported by the patents’ disclosures and prosecution histories, the understanding of those of ordinary skill in the art, and the extrinsic evidence. The analysis below confirms not only that the claim terms can be construed, but that they should be construed as Philips proposes, assuming that a construction is necessary at all. As explained more fully below, each of the claim terms that WAC challenges as indefinite “inform[s], with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 134 S. Ct. at 2124.<sup>3</sup>

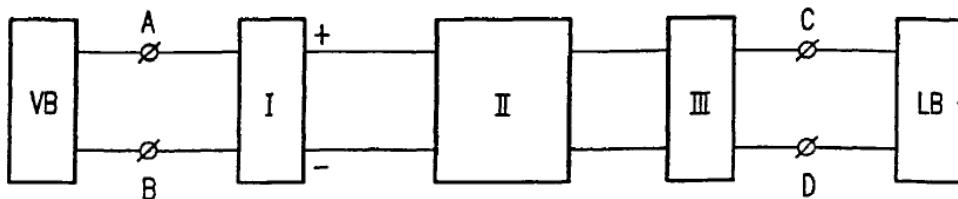
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<sup>3</sup> The parties agreed that expert reports on invalidity would be exchanged 120 days after the Court’s claim construction order. *See* Dkt. 20, Appendix C at 2. Although courts have discretion “as to when to determine indefiniteness during patent case proceedings,” *Indus. Tech. Research Inst. v. LG Elecs. Inc.*, No. 3:13-CV-2016, 2014 WL 6907449, at \*3 (S.D. Cal. Dec. 8, 2014), WAC has provided no reason to deviate from the parties’ agreed schedule on the issue of invalidity by indefiniteness. To the extent the Court is inclined to accept WAC’s indefiniteness

**B. U.S. Patent No. 6,013,988 (Bucks)**

The '988 patent (Ex. 3) describes an electronic circuit for supplying power to light emitting diodes ("LEDs"). The electronic circuit is compatible with a control unit, such as a dimmer wall switch. Generally, control units require "leakage" current to operate properly. While incandescent bulbs inherently drain off such leakage current, power supply circuitry for LEDs does not. The novel circuitry for supplying power to LEDs in the '988 patent conducts or drains "leakage" current from the control unit when the control unit is in an "off" state.

As shown in Figure 1 below, the circuit includes connection terminals (A and B) for connecting the circuit to a control unit (VB), an input filter (I), a converter (III) with a control circuit that converts the power from the control unit to the direct current ("DC") required by the LEDs, and output terminals (C and D) for connecting the converter to the LEDs (LB).



**FIG. 1**

The circuit also includes a "self-regulating, current-conducting network" (II) that drains the leakage current when the control unit is in an "off" state. To conserve power, the circuit may also deactivate the self-regulating, current-conducting network when the converter is on.

**1. "input filter means"; "said filter means"**

Claim 1 recites "input filter means" and "said filter means." These terms should be construed to mean "a circuit that selectively transmits or rejects a signal in one or more intervals

arguments as a validity challenge at this stage, Philips respectfully requests an opportunity to fully brief the issue, including supporting declarations, as a validity question rather than as an issue of claim construction.

of frequencies conducted on the line input between the control unit and the converter.”<sup>4</sup> “Filter” is a standard term of art that the Wiley Electrical and Electronics Engineering Dictionary (Ex. 10, “Wiley Dictionary”) defines as an “electric circuit or device which selectively transmits or rejects signals in one or more intervals of frequencies.” Ex. 10 at 285. Philips’ construction follows this standard definition, except that it adds language to give meaning to the word “input” in “input filter means,” which identifies the location of the filter, i.e., on the line input between the control unit and the converter, as shown in Figure 1 (line input shown at terminal A). Ex. 3 at fig. 1. This understanding was confirmed during prosecution, where the applicants stated that the input filter means must be on the input of the converter, as distinguished from the cited reference, which disclosed a filter on the output of the converter. *See Ex. 11, ’988 File History, Amendment at 10-12 (July 6, 1999)* (“[T]he arrangement of the various circuit elements is completely different from the apparatus disclosed in Yoshikawa et al., in that the output from the filter means is coupled to the converter, and the output from the converter is applied to the semiconductor light source.”). *See also* Batarseh Decl. ¶¶ 18-23.<sup>5</sup>

WAC argues that “input filter means” is in means-plus-function format and that the term is “indefinite” because “[a] structure cannot be determined.” Ex. 2 at 2. However, “input filter” is itself structure and a standard term of art, as explained above. Thus, this term is not in means-plus-function format. *See Al-Site Corp. v. VSI Int’l, Inc.*, 174 F.3d 1308, 1318 (Fed. Cir. 1999) (“[A]ccording to its express terms § 112, ¶ 6 governs only claim elements that do not recite sufficient structural limitations.”). Even a prior expert engaged by WAC’s counsel in another

<sup>4</sup> Each of the terms construed herein is construed to have the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips*, 415 F.3d at 1312-13. The expert declaration relevant to each patent addressed herein identifies the time of the invention, or the claimed priority date, for that respective patent.

<sup>5</sup> “Batarseh Decl.” refers to the Declaration of Dr. Issa Batarseh in Support of Philips’ Opening Claim Construction Brief, which is being filed concurrently herewith.

case involving the '988 patent, Dr. David A. Smith, conceded that "input filter" is a structure. Ex. 12, Smith Dep. Tr. 222:5-224:20 (Nov. 22, 2013) ("Q. So an input filter is a device? A. Sure."). This term is also not in means-plus-function format because it does not recite a function. *Sage Prods.*, 126 F.3d at 1427 ("[W]here a claim uses the word 'means,' but specifies no corresponding function for the 'means,' it does not implicate section 112."). WAC proposes a function, but the claim does not recite that function, or any function. Thus, WAC's indefiniteness argument based on lack of corresponding structure fails because the term is not subject to § 112(f), and as explained above, these terms "inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2124.

## **2. "output means"**

Claim 1 recites "output means of the input filter means" and "output means of said converter." The term "output means" in claim 1 is a standard term of art that means "terminals or wires at the output." Batarseh Decl. ¶¶ 24-25. The specification confirms that this construction is correct by its use of the terms "output," "output pin," "output terminals," and "output means" interchangeably to mean the terminals or wires at the output of a device or circuit. *See* Ex. 3 at col. 1:16-17 ("output terminals for connection to the semiconductor light source"), 3:56-57 ("pin 103 of IC 100 forms an output pin"), 4:31-33 ("an output of a control circuit SC"), 4:34-36 ("an output of an amplifier A"), 4:46-48 ("[o]utput terminals of the diode rectifier bridge REC").

WAC argues that "output means" is in means-plus-function format. That is incorrect because the claim does not recite a corresponding function. *See Sage Prods.*, 126 F.3d at 1427. WAC asserts that the function is "indefinite." This argument, however, just confirms that the limitation is not in means-plus-function format because the claim recites no function at all. WAC argues that, "[t]o the extent a construction is possible, the function is 'providing an output'" (Ex. 2 at 2), but claim 1 does not recite this function, and WAC's effort to import it into the claim

should be rejected. *Asyst Techs.*, 268 F.3d at 1369-70 (“The first step in construing a means-plus-function limitation is to identify the function *explicitly recited* in the claim.” (emphasis added)). WAC argues that the structure is “indefinite” and “cannot be determined,” but even assuming “output means” is in means-plus-function format, this argument ignores the ample disclosure of structure quoted above, including “output,” “output terminals,” and “output means,” which are used interchangeably throughout the specification to refer to output connections, i.e., terminals or wires.

**3. “draining off a leakage current in the control unit when said control unit is in a non-conducting state”**

Claim 1 recites “draining off a leakage current in the control unit when said control unit is in a non-conducting state.” That term should be construed to mean “drawing current that flows through the control unit in the off state.”

“Draining off” current is a standard term that means “drawing” current. *Id.* ¶ 27; Ex. 10, Wiley Dictionary at 212 (“drain”: “1. The current, power, or energy drawn from a source. . . . 2. To draw current, power, or energy . . . ”). “Leakage current” is also a standard term, and it means “current that flows through a device in the off state.” Batarseh Decl. ¶ 27; Ex. 10, Wiley Dictionary at 415 (“leakage current”: “Current which flows through a component, circuit, or device which is in the off state.”). The specification explains that a control unit may conduct or “leak” a small amount of current when the control unit is off, or in a “non-conducting state,” and the self-regulating, current-conducting network “drains off” or draws this current. Ex. 3 at col. 1:32-41. Thus, combining the standard definitions of “draining off” and “leakage current” with the remaining claim language tying the leakage current to the control unit yields Philips’ proposed construction. *See also* Batarseh Decl. ¶¶ 26-29. Indeed, the expert WAC’s counsel

engaged in prior litigation, Dr. Smith, testified that there is “nothing wrong” with Philips’ construction. Ex. 12, Smith Dep. Tr. 219.

WAC proposes “[p]roviding a path for the current which passes through the control unit when the control unit is at a low voltage level.” Ex. 2 at 2. WAC’s construction is wrong because it rewrites the claim from “when said control unit is in a non-conducting state,” i.e., when the control unit is off, to “when the control unit is at a low voltage level,” which is not in claim 1. For example, the control unit may be at a “low voltage level” while the control unit is on or in a conducting state, which makes WAC’s proposal overly broad and contrary to the intrinsic and extrinsic evidence. Batarseh Decl. ¶ 29; Ex. 3 at col. 1:37-38 (“a leakage current occurs in the non-conducting state of the relay”). WAC’s proposal is also ambiguous because it does not distinguish between whether the voltage across the control unit is low, or whether the output voltage of the control unit is low, either of which is different from the claim.

**4. “means [f]or deactivating the self-regulating current-conducting network [w]hen the converter is switched on”**

Claim 2 recites “means [f]or deactivating the self-regulating current-conducting network [w]hen the converter is switched on.” The parties agree that this term is in means-plus-function format. The function is “deactivating the self-regulating current-conducting network [w]hen the converter is switched on,” and the corresponding structure is “transistor SR and voltage divider.”<sup>6</sup> Batarseh Decl. ¶¶ 30-36. The specification describes means IV (shown in Figure 2 below) as performing the recited function, Ex. 3 at col. 3:13-20 (“FIG. 2 also shows means IV . . . for deactivating the self-regulating current-conducting network II when the converter III is switched on.”), and the only structure in block IV necessary to perform the function is the

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<sup>6</sup> Claim limitations in means-plus-function format must be construed to cover the corresponding structure *and* equivalents thereof. 35 U.S.C. § 112(f). Thus, the proper construction of the means-plus-function terms herein includes Philips’ proposed corresponding structure *and* equivalents thereof.

combination of transistor SR and voltage divider (i.e., the two vertical resistors), Batarseh Decl.

¶ 31. To “deactivate the self-regulating, current-conducting network,” transistor SR turns on (i.e., starts to conduct current), and the values of the resistors in the voltage divider are selected so that transistor SR turns on “when the converter is switched on.” *Id.*

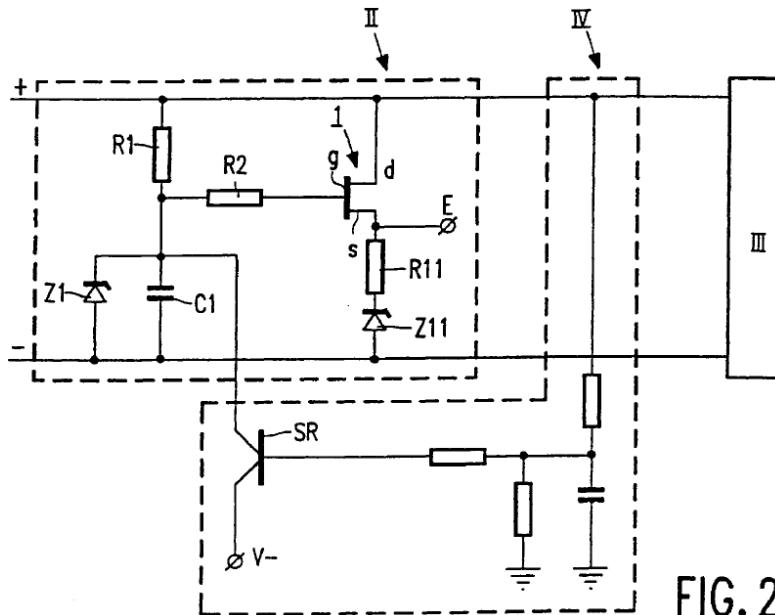


FIG. 2

WAC proposes a function that improperly changes the claim language from “when the converter is switched on” to “when the control unit voltage rises to a high voltage level.” Ex. 2 at 2. WAC identifies the corresponding structure as:

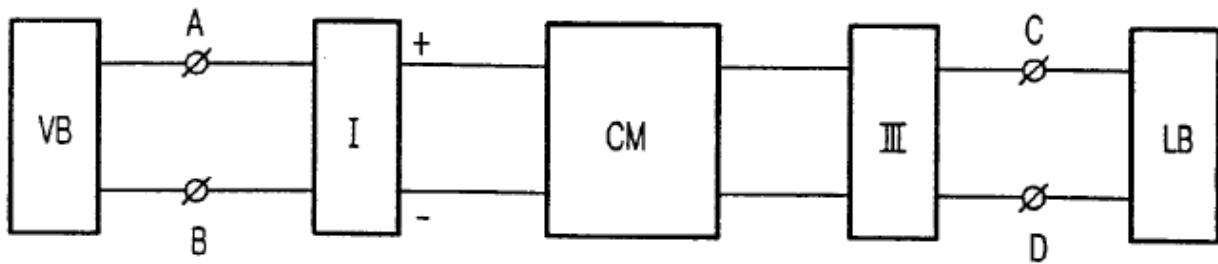
The components in the arrangement as depicted in the dashed box “IV” - a switch SR, a voltage divider, and an auxiliary voltage V-; wherein the voltage divider has three resistors and a capacitor in the arrangement as depicted in dashed box “IV”; and wherein the switch SR is connected to a common junction point of the resistor R1 and the capacitor C1 and to the auxiliary voltage V-.

*Id.* WAC’s proposal improperly includes additional structure that is unnecessary to perform the recited function. *Asyst Techs.*, 268 F.3d at 1369-70 (“Section 112 paragraph 6 does not ‘permit incorporation of structure from the written description beyond that necessary to perform the claimed function.’” (citation omitted)).

For example, WAC identifies structure inside of means IV that does not perform the recited function, i.e., the horizontal resistor, the capacitor, and the auxiliary voltage V-. Batarseh Decl. ¶ 36. Instead, the horizontal resistor limits the current going through the transistor SR, and the capacitor prevents noise in the circuit from inadvertently turning transistor SR on or off. *Id.* Even Dr. Smith agreed that the horizontal resistor and capacitor perform these functions. Ex. 12, Smith Dep. Tr. 244, 247. As for “auxiliary voltage V-,” the specification explains that it provides other functions or advantages—e.g., avoiding “the hazard of the network being activated when the voltage of the control unit has a zero-crossing.” Ex. 3 at col. 3:27-44; Batarseh Decl. ¶ 35. WAC’s construction is also improper because it identifies structure *outside* of block IV, e.g., “the resistor R1 and the capacitor C1” that also do not perform the means for deactivating. Batarseh Decl. ¶ 34; Ex. 3 at fig. 2. The specification does not suggest that any circuitry outside of block IV performs the recited function.

### C. U.S. Patent No. 6,147,458 (Bucks)

The ’458 patent (Ex. 4) describes an electronic circuit for supplying power to LEDs. Similar to the ’988 patent, which shares two of the same inventors, the ’458 patent discloses connection terminals (A and B) for connecting to a control unit (VB), an input filter (I), a converter with a control circuit (III), and output terminals (C and D) for connecting the converter to the LEDs. The ’458 patent replaces the self-regulating current-conducting network (II) in the ’988 patent (*see* Ex. 3 at fig. 1) with a circuit (means CM) for removing a leakage current when the control unit is off, and a circuit for deactivating the means CM when the control unit is turned on. *See* Ex. 4 at fig. 1.



**FIG. 1**

The '458 circuit also includes circuitry for detecting a defective converter or LED, i.e., a converter or LED that is functioning incorrectly.

**1. “input filter means”; “input filter”**

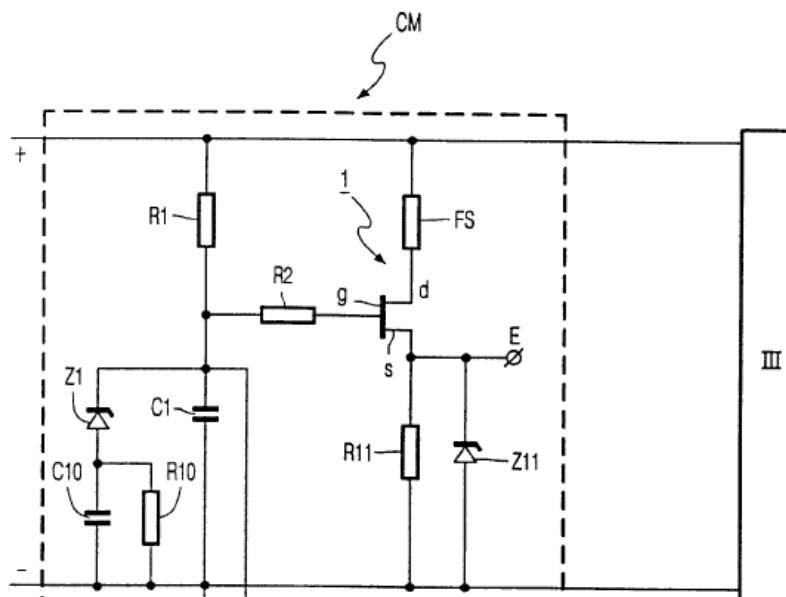
Claim 1 recites “input filter means,” and claim 15 recites “input filter.” These terms should be construed to mean “a circuit that selectively transmits or rejects a signal in one or more intervals of frequencies on the line input conducted between the control unit and the converter.” Although the '458 and '988 patents are different, both use the terms “input filter” and “input filter means,” and the proper construction of these terms is the same, and derived from the standard definition of “filter” in the Wiley Dictionary. *See supra* Part III.B.1. The specification also supports this construction because it shows the location of the input filter in Figure 1 (identical to Figure 1 of the '988 patent) and use the terms “input filter” and “input filter means” interchangeably. *See, e.g.*, Ex. 4 at abstract (“input filter”), col. 1:9 (“input filter means”); *see also* Batarseh Decl. ¶¶ 40-42.

WAC again argues that “input filter means” is in means-plus-function format, and that the term is “indefinite” and “[a] structure cannot be determined.” Ex. 2 at 3. These arguments have no merit for the same reasons above for “input filter means” in the '988 patent. *See supra*

Part III.B.1; *Al-Site*, 174 F.3d at 1318; *Sage Prods.*, 126 F.3d at 1427. WAC also argues that “input filter” is “indefinite” and a “construction is not possible.” Ex. 2 at 3. WAC’s “indefiniteness” argument is meritless. *See supra* Parts III.A, B.1. Philips’ proposed construction for “input filter” is correct and shows that construction is possible.

## 2. “removing a leakage current”

Claims 1 and 15 recite “removing a leakage current.” This term should be construed to mean “drawing current that flows through a device in the off state.” “Leakage current” is a standard term of art that the Wiley Dictionary defines as “[c]urrent which flows through a component, circuit, or device which is in the off state.” Ex. 10, Wiley Dictionary at 415. Philips’ proposed construction is consistent with this definition, and the specification supports it. As shown in Figure 2 (a portion of which is reproduced below) and explained in the specification, MOSFET (metal-oxide semiconductor field-effect transistor) 1 is turned on when the control unit is off (i.e., in a non-conductive state), and the means CM drains the leakage from the control unit through MOSFET 1. Ex. 4 at fig. 2, cols. 3:54-4:8; *see also* Batarseh Decl. ¶¶ 50-52.



Ex. 4 at fig. 2. The specification refers to “removing” current as “conducting” current, which is synonymous with “drawing” current. *See, e.g., id.* at cols. 1:40-43 (“use is made of the means CM which ensure that, in the non-conducting state of the control unit, for example a solid-state relay, a leakage current occurring in the control unit is removed”), 4:24-25 (“deactivates the means CM by rendering the controlled semiconductor element 1 non-conductive”), 4:57 (“MOSFET 1 remains conductive”). The specification also explains that an LED may be controlled by a control unit, e.g., a solid-state relay, that conducts or “leaks” a small amount of current when the control unit is off, or in a “non-conducting state,” and the means CM is intended to draw or “remove” this current. *Id.* at col. 1:33-46; Batarseh Decl. ¶ 51.

WAC proposes “providing a path for the current which passes through the control unit when the control unit is at a low voltage level.” Ex. 2 at 4. WAC’s construction is wrong because “leakage current” is current that flows through a device in the non-conducting or off state, not merely when there is a “low voltage level.” Ex. 10, Wiley Dictionary at 415; *see also* Batarseh Decl. ¶¶ 50-52. For example, the control unit may be at a low voltage level when the control unit is in a conducting or on state, which makes WAC’s proposal overly broad and contrary to the intrinsic and extrinsic evidence. Batarseh Decl. ¶ 52; Ex. 4 at col. 1:37-38 (“a leakage current occurs in the non-conducting state of the relay”).

3. **“means CM for removing a leakage current occurring in the control unit in the non-conductive state, which means include a controlled semiconductor element” (claim 1); “means CM including a controlled semiconductor element for removing a leakage current occurring in the control unit in the non-conducting state” (claim 15)**

Claim 1 recites “means CM for removing a leakage current occurring in the control unit in the non-conductive state, which means include a controlled semiconductor element,” and claim 15 recites “means CM including a controlled semiconductor element for removing a

leakage current occurring in the control unit in the non-conductive state.” These terms mean “a circuit, including a controlled semiconductor element, that draws leakage current from the control unit when the control unit is off.” For the reasons above (*see supra* Part III.C.2), “removing a leakage current” means “drawing current that flows through a device in the off state.” The claim language also requires that the leakage current is “occurring in the control unit,” which supports “draws leakage current from the control unit when the control unit is off” in Philips’ proposed construction. The means CM includes a “controlled semiconductor element,” which can be in a conductive or non-conductive state and is a transistor in a preferred embodiment. *See, e.g.*, Ex. 4 at cols. 2:19-21 (“rendering the controlled semiconductor element non-conductive”), 2:41-42 (“the controlled semiconductor element of the means CM becomes conductive”), 3:58-60 (“The means CM . . . comprise a MOSFET [metal-oxide semiconductor field-effect transistor] 1 as the controlled semiconductor element . . .”); *see also* Batarseh Decl. ¶¶ 43-49.

WAC argues that this term is in means-plus-function format (Ex. 2 at 3), but “where a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format.” *Sage Prods.*, 126 F.3d at 1427-28; *see also Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1374-75 (Fed. Cir. 2014) (stating that merely “defining a particular claim term by its function is not improper and is not sufficient to convert a claim element containing that term into a ‘means for performing a specified function’ within the meaning of [35 U.S.C. § 112(f)]” (internal quotation marks omitted)). Claim 1 identifies sufficient structure—i.e., “a controlled semiconductor element”—to perform the recited function of “removing a leakage current occurring in the control unit in the non-conducting state.” Batarseh Decl. ¶ 46. A preferred

embodiment discloses MOSFET 1 as the controlled semiconductor element. Ex. 4 at col. 3:58-60. Depending on the voltage applied to its gate, MOSFET 1 will turn on and remove leakage current occurring in the control unit in the non-conducting state. Batarseh Decl. ¶ 49.

To the extent the Court interprets this term as in means-plus-function format, the function would be “removing a leakage current occurring in the control unit in the non-conducting state,” not WAC’s truncated function of “removing a leakage current arising from the control unit,” which omits claim language and ignores features of the invention. *See Asyst Techs.*, 268 F.3d at 1369-70 (“The first step in construing a means-plus-function limitation is to identify the function explicitly recited in the claim.”); *see, e.g.*, Ex. 4 at col. 1:40-43 (“[U]se is made of the means CM which ensure that, in the non-conducting state of the control unit, for example a solid-state relay, a leakage current occurring in the control unit is removed. . . .”).

WAC also identifies the wrong structure by including structure that is outside of the means CM, for example, input filter means I. Batarseh Decl. ¶ 48; Ex. 4 at figs. 1, 2, col. 3:51-56 (“Reference I denotes input filter means . . . Means CM for removing a leakage current occurring in the control unit in the non-conducting state are referenced CM.”). In addition, WAC identifies structure in the block labeled CM that is not required to perform the recited function, including cutout element FS, resistor R2, a voltage divider circuit consisting of resistor R1 and capacitor C1, zener diode Z1, capacitor C10, and resistor R10, and parallel circuit of resistor R11 and zener diode Z11. These elements other than MOSFET 1 are not necessary to perform the function of “removing a leakage current occurring in the control unit in the non-conducting state.” Batarseh Decl. ¶¶ 48, 49.

Specifically, cutout element FS performs the opposite function of “causing the means CM to be deactivated” by creating an open circuit when “the MOSFET 1 remains conductive”

for some time. Ex. 4 at col. 4:53-59; Batarseh Decl. ¶ 49. Resistor R2 is a gate resistor used to prevent MOSFET 1 from oscillating. Batarseh Decl. ¶ 49. Capacitor C1 and resistor R1 form an RC filter that prevents noise from accidentally affecting the state of MOSFET 1. *Id.* Zener diode Z1 prevents the gate voltage of MOSFET 1 from rising high enough to damage MOSFET 1, and capacitor C10 and resistor R10 form an RC noise filter to prevent zener diode Z1 from accidentally conducting. *Id.* Zener diode Z11 regulates the voltage at connection E, and resistor R11 provides a path to ground for MOSFET 1 when the voltage from the source of MOSFET 1 is not high enough for zener diode Z11 to conduct. *Id.*

**4. “self-regulating deactivating means for deactivating the means CM” (claim 1); “self-regulating deactivating means for deactivating the means CM when the control unit is in a conductive state” (claim 15)**

Claim 1 recites “self-regulating deactivating means for deactivating the means CM” and claim 15 recites “self-regulating deactivating means for deactivating the means CM when the control unit is in a conductive state.” Philips and WAC agree that these terms are in means-plus-function format and that the function for the term in claim 1 is “deactivating the means CM.” WAC applies the same function to the term in claim 15, but that function should match the claim language, which is “deactivating the means CM when the control unit is in a conductive state.”

*See Asyst Techs., 268 F.3d at 1369-70 (“The first step in construing a means-plus-function limitation is to identify the function explicitly recited in the claim.”).*

The corresponding structure disclosed in the specification for performing the recited functions are “transistor T<sub>M</sub> and zener diode Z60.” Batarseh Decl. ¶¶ 53-57. The specification describes deactivating means IV in Figure 2 (a portion of which is reproduced below) as performing this function, and transistor TM and zener diode Z60 in means IV are all that is necessary to perform the function. *See* Ex. 4 at fig. 2, col. 4:9-11 (“FIG. 2 also shows

deactivating means IV, . . . which serve to deactivate the means CM.”); Batarseh Decl. ¶ 54. To deactivate the means CM, transistor  $T_M$  turns on or becomes conducting when zener diode Z60 is conducting, which brings the voltage on the gate of MOSFET 1 below its operational threshold, causing MOSFET 1 to turn off, i.e., become non-conducting. Ex. 4 at col. 4:9-25; Batarseh Decl. ¶ 55.

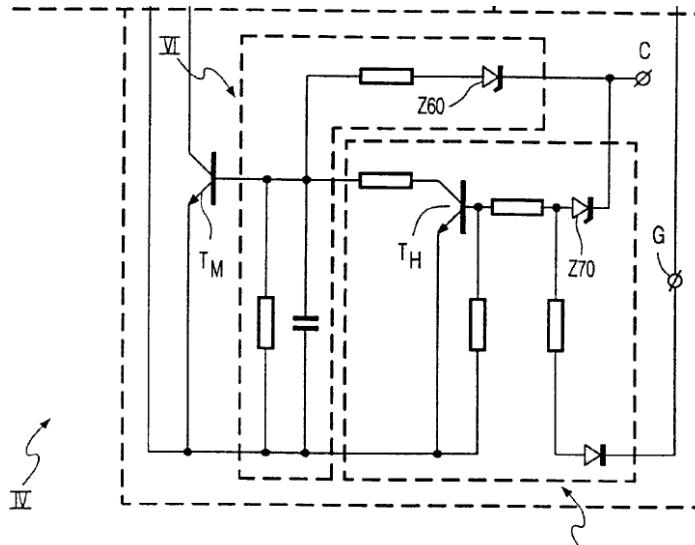


FIG. 2

WAC identifies the corresponding structure as “[t]he components in the arrangement as depicted in the dashed box ‘IV’ – a switch  $T_M$  is connected to a common junction point of resistor  $R_1$  and capacitor  $C_1$  and to the negative pole -, a control electrode of the switch  $T_M$  is connected to the output terminal  $C$  by means of a voltage detection network.” Ex. 2 at 4. WAC errs by identifying structure outside the dashed box IV—e.g., resistor  $R_1$  and capacitor  $C_1$ —and several components inside the dashed box IV, other than transistor  $T_M$  and zener diode Z60, that are not necessary for performing the recited function. Batarseh Decl. ¶ 57.

For example, resistor  $R_1$  and capacitor  $C_1$  form an RC filter bias MOSFET 1. *Id.* The parallel resistor and capacitor in box VI—located inside of box IV—serve to prevent the transistor  $T_M$  from inadvertently turning on or off, and the resistor in series with zener diode Z60

limits current to avoid damage to transistor T<sub>M</sub>. *Id.* The components in box VII (also inside box IV) function to *prevent* deactivation of the means CM in the event that zener diode Z70 detects a signal from the converter above a maximum voltage, which is the opposite of the recited function. *Id.*; Ex. 4 at fig. 2, col. 4:25-34. Because these components are not necessary to deactivate the means CM, they should not be included as corresponding structure. *Asyst Techs.*, 268 F.3d at 1369-70.

**5. “detection means for detecting an incorrect functioning of the converter or of the semiconductor light source connected thereto” (claim 1); “detection means for detecting a defective converter or semiconductor light source connected thereto” (claim 15)**

Claim 1 recites “detection means for detecting an incorrect functioning of the converter or of the semiconductor light source connected thereto,” and claim 15 recites “detection means for detecting a defective converter or semiconductor light source connected thereto.” The parties agree that these are means-plus-function terms. The recited functions mean “detecting a functioning in which the output voltage is either higher than a maximum voltage or lower than a minimum voltage when the control unit is turned on,” and the corresponding structure should be “zener diode Z60; or zener diode Z70.” Batarseh Decl. ¶¶ 58-67.

The specification supports Philips’ proposed meaning of the functions of these terms. *See* Ex. 4 at col. 4:60-63 (“As long as the converter III and the semiconductor light source LB function correctly, the voltage at the output terminal C will be above the minimum voltage and below the maximum voltage.”); *see also id.* at cols. 4:16-19, 25-27. For example, an output voltage that is higher than a maximum or lower than a minimum indicates that the converter is defective or functioning incorrectly, or that there is a short in the semiconductor lighting device. *See id.* at cols. 2:5-14, 4:53-56 (“If the converter functions improperly or in the case of a short-

circuit in the connected semiconductor light source, the voltage at the output terminal C will not reach the threshold voltage of the zener diode Z1.”).

WAC agrees that the function recited in the claim should have its plain and ordinary meaning, but WAC’s “plain and ordinary meaning” is incorrect. WAC asserts that the limitation means “determining whether a level of voltage is higher than a maximum voltage or lower than a minimum voltage, when the control unit is turned on.” Ex. 2 at 3. WAC’s proposal fails to identify which “voltage” it is referring to, and thus, might cover a voltage other than the output voltage. Batarseh Decl. ¶ 60. It is possible for some voltage in the circuit to be higher than a maximum or lower than a minimum when the control unit is turned on, while at the same time having the output voltage between the minimum and maximum, and thus having a correct functioning of the converter and semiconductor light source. *Id.*

Regarding corresponding structure, the specification describes either the “detection means VI” or the “detection means VII” as performing the recited function. *See* Ex. 4 at cols. 4:16-5:19 (“Said voltage-detection network includes detection means VI for detecting a minimum voltage and detection means VII for detecting a maximum voltage. . . . As long as the converter III and the semiconductor light source LB function correctly, the voltage at the output terminal C will be above the minimum voltage and below the maximum voltage.”). The components in detection means VI and VII necessary to perform the recited function is zener diode Z60 or zener diode Z70, which detect whether the output voltage is below a minimum voltage or above a maximum output voltage, respectively. *Id.* at fig. 2, col. 4:18-22, 25-27; Batarseh Decl. ¶ 61. For example, zener diode Z60 detects if there is an incorrect functioning of the converter or a short circuit in the semiconductor light source, and zener diode Z70 detects if there is an open circuit in the semiconductor light source. Batarseh Decl. ¶ 59. Thus, zener diode

Z60 or zener diode Z70 is the only structure necessary to perform the recited function. *Id.* ¶¶ 60, 63.

WAC identifies the corresponding structure as:

The components in the arrangement as depicted in the dashed boxes “VI” and “VII” – wherein dashed box “VI” has a zener diode Z60 arranged in series with a voltage-dividing network for rendering conductive the switch  $T_M$  at a voltage at the output terminal C which is higher than the minimum voltage; wherein dashed box “VII” has a zener diode Z70 for detecting a maximum voltage at the output terminal C, wherein the zener diode Z70 is connected to a control electrode and to an emitter of a switch  $T_H$ , a collector of the switch  $T_H$  is connected to the control electrode of switch  $T_M$ , a voltage on the output terminal C above the maximum voltage, the switch  $T_H$  is rendered conductive, the zener diode Z70 is also connected to the control circuit of the converter III by a resistance-diode network via a connection point G.

Ex. 2 at 3. WAC’s proposed structure, however, improperly includes structures beyond the zener diodes that are not necessary to perform the recited function. Specifically, the resistor in series with zener diode Z60 or Z70 (i.e., between the diode and its respective transistor) limits the current going into the base of transistor  $T_M$  or  $T_H$ , respectively. Batarseh Decl. ¶ 63. The resistor at the base of transistor  $T_M$  or  $T_H$  prevents its respective transistor from turning on when zener diode Z60 or Z70, respectively, is not conducting. *Id.* Transistor  $T_H$  inverts the signal from zener diode Z70 so that when zener diode Z70 is conducting, transistor  $T_H$  is not conducting, and vice versa. *Id.* The capacitor at the base of transistor  $T_M$  forms a noise filter with the resistor in series with zener diode Z60 to prevent the transistor from accidentally turning on due to noise when it is off, or vice versa. *Id.* Finally, the resistor and diode between zener diode Z70 and connection point G are used to activate converter III. *Id.* These unnecessary components should not be included in the corresponding structure. *Asyst Techs.*, 268 F.3d at 1369-70.

**D. U.S. Patent No. 6,561,690 (Balestriero)**

The '690 patent (Ex. 5) discloses a lighting system (e.g., a "luminaire") having a housing that defines an internal space containing at least one LED and an optic (e.g., a "collimator") for guiding the light emitted by the LED towards outside of the housing. Ex. 5 at abstract, col. 1:1-8. Since the light emission from LEDs has specific light output distribution patterns, optics with specifically rendered geometries can be provided with the LEDs to obtain more optimum light emission characteristics. *Id.* at col. 1:15-20, 5:47-59. However such optimum light emission depends on the maintenance of an accurate position of the optic with respect to the LED. *Id.* at col. 1:15-24, 5:49-57. Since lighting systems are typically moved around a lot while in transport and during installation, it is important that the optic have a robust mounting with respect to the LED so that the lighting system can maintain the properties claimed by the manufacturer. *Id.* at col. 1:20-24.

According to one preferred embodiment, the lighting system has a housing that defines an internal space containing at least one LED and an optical means for guiding the light emitted by the LED towards outside of the housing. *Id.* at abstract; col. 1:1-8. The LED is mounted to a support connected to the housing, and the optical means is held in place between a retaining element connected to the housing and the support by pressure exerted by the retaining element and support. *Id.* at col. 1:42-47, 4:54-57. One end of the optical means may be in contact with the support. *Id.* at col. 1:66-2:4. Figure 1, annotated below, illustrates an exemplary luminaire, including housing 1, LED 2, support 3, optical means 4, and retaining element 10.

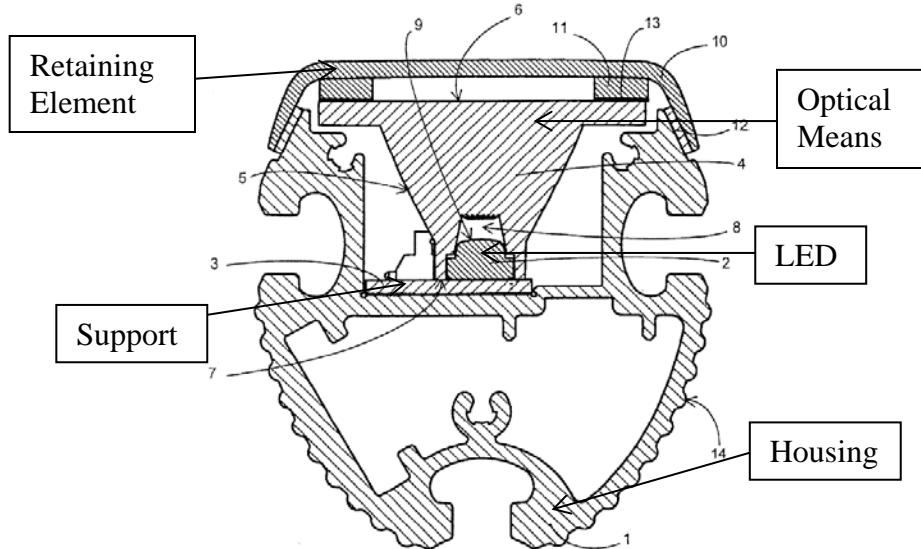


FIG. 1

**1. “optical means for guiding the light emitted by the LED towards outside of the housing”**

Claim 1 of the '690 patent recites “optical means for guiding the light emitted by the LED towards outside of the housing.” The parties agree that this term is in means-plus-function format and that the function is “guiding the light emitted by the LED towards outside of the housing.” The corresponding structure the specification describes as performing this function is “a collimator with a symmetrical lateral surface.” Ex. 5 at figs. 1 (collimator 4), 2 (collimator 23), 3 (collimator 23), abstract, cols. 1:4-20 (“optical means, which operate by principles of physical optics, have a geometry which renders it possible to obtain an optimum performance”), 1:55-2:4, 4:9-12, 5:59-6:7; *see also* Teich Decl.<sup>7</sup> ¶¶ 23-29. Specifically, the specification states that “[t]he optical means here comprise a collimator 4,” which may be “full-body” or “a conical concave reflector,” and “collimator 4 has a symmetrical lateral surface 5.” Ex. 5 at col. 3:24-52. Thus, the specification describes several exemplary collimators as the optical means, each having

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<sup>7</sup> “Teich Decl.” refers to the Declaration of Dr. Malvin Teich in Support of Philips’ Opening Claim Construction Brief, which is being filed concurrently herewith.

in common a symmetrical lateral surface, which is the only structure necessary to perform the function of “guiding the light emitted by the LED towards outside of the housing.” Teich Decl. ¶¶ 25, 27. The prosecution history also supports this construction. *See, e.g.*, Ex. 15, ’690 File History, Office Action at 2-3, Amendment at 5 (referring to “reflective cone” as “optical means”).

WAC identifies the corresponding structure as:

A conical concave reflector or a full-body collimator formed by a solid mass of a material which transmits light and is temperature-resistant, wherein the collimator has a symmetrical lateral surface 5 based on a parabolic or conical body of revolution, a planar front surface, and a base surface geometrically opposed to the front surface; the base is planar; the emission characteristic of the system comprising the LED and the collimator has a maximum emission direction which is perpendicular to the plane defined by the front surface of the collimator and has a cavity in its base for accommodating the LED; the inside of the cavity over-dimensioned and the collimator rests with its base on the support on which the LED 2 is mounted.

Ex. 2 at 4. This construction, however, includes structures that are not necessary for performing the recited function. Teich Decl. ¶¶ 27-29. These additional structures must be rejected as part of the corresponding structure. *See Asyst Techs.*, 268 F.3d at 1369-70.

Specifically, WAC’s structure identifies components separate from the collimator, such as the “LED” and “support.” WAC also identifies characteristics of exemplary embodiments of collimators that are not necessary for “guiding the light,” e.g., “solid mass of material,” “temperature-resistant,” “a parabolic or conical body of revolution,” “a planar front surface,” “a base surface geometrically opposed to the front surface,” “the base is planar,” “a maximum emission direction which is perpendicular to the plane defined by the front surface,” “a cavity in its base for accommodating the LED,” “the inside of the cavity over-dimensioned,” and “the collimator rests with its base on the support.” These additional elements are either unrelated to or

unnecessary for guiding the light emitted by the LED towards outside the housing. Teich Decl.

¶¶ 28-29.

For example, a collimator with a symmetrical lateral surface can guide the light emitted by the LED, irrespective of whether it is temperature resistant, its base is planar, or it rests with its base on the support. *Id.* Moreover, claim 1 requires only that the first end of the optical means be “proximate the support,” and dependent claim 6 adds the limitation that “the first end of the optical means is in contact with the support”; thus, it is wrong for WAC to import the requirement that “the collimator rests with its base on the support” into claim 1 as part of the “optical means.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (noting that “presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim”).

#### **E. U.S. Patent No. 6,586,890 (Min)**

The '890 patent (Ex. 6) discloses an electronic circuit for providing power to LEDs using a technique called pulse width modulation (“PWM”). The circuit according to claim 7, for example, includes a “means for sensing current” to the LEDs, which generates a sensed current signal, and a “means for generating a reference signal.” A “means for comparing the sensed current signal to the reference signal” compares the signals and generates a feedback signal. A “means for modulating a pulse width” generates a drive signal based on the feedback signal, and a “means for supplying power” supplies current to the LEDs in response to the drive signal.

##### **1. “means for sensing current to the LED array, said current sensing means generating a sensed current signal”**

Claim 7 of the '890 patent recites “means for sensing current to the LED array, said current sensing means generating a sensed current signal.” Philips and WAC agree that this term is in means-plus-function format and that the function is “sensing current to the LED array and

generating a sensed current signal.” The corresponding structure disclosed in the specification is “current sensor 60; resistor R1A1, R1A2, and/or R1A3 in Figure 2A; or resistor R1B1, R1B2, and/or R1B3 in Figure 2C.” Batarseh Decl. ¶¶ 70-72. The specification describes these components as performing the recited functions. *See Ex. 6 at figs. 1, 2A, 2B, 2C, 2D, cols. 2:14-16 (“The comparator 58 provides the feedback signal by comparing the sensed current signal from current sensor 60 and the reference signal from reference current source 62.”), 3:30-35 (“In the embodiment shown [in Fig. 2A], resistors [R1A1, R1A2, and/or R1A3] between the first power supply 112 and the first LED array 114 are used for LED current sensing; . . .”);* Batarseh Decl. ¶ 71.

WAC does not propose a structure, asserting instead that the structure is “indefinite” and “cannot be determined.” Ex. 2 at 5. This argument is incorrect (*see supra* Part III.A), as the above explanation shows that construction is possible. Batarseh Decl. ¶¶ 71-72.

## **2. “means for generating a reference signal”**

Claim 7 recites “means for generating a reference signal.” The parties agree that this term is in means-plus-function format and that the function is “generating a reference signal.” The corresponding structure disclosed in the specification is “reference current source 62; or the internal reference in PWM control IC 118 or 134.” Batarseh Decl. ¶¶ 73-75. The specification describes reference current source 62, or the internal reference in PWM control IC 118 or 134 as generating a reference signal. Specifically, “comparator 58 provides the feedback signal by comparing the sensed current signal from current sensor 60 and the *reference signal* from reference current source 62.” Ex. 6 at col. 2:14-16 (emphasis added); *see also id.* at figs. 1, 2A, 2B, 2C, 2D. The specification also states that the “output of op amp 120 represents a scaled version of the first LED array 114 current, which is compared to an *internal reference* of the PWM control IC.” *Id.* at col. 3:23-30 (emphasis added).

WAC does not propose a structure, asserting instead that the structure is “indefinite” and “cannot be determined.” Ex. 2 at 5. This argument is incorrect (*see supra* Part III.A), as the above explanation shows that construction is possible. *See also* Batarseh Decl. ¶¶ 74-75.

**3. “means for comparing the sensed current signal to the reference signal, said comparing means generating a feedback signal”**

Claim 7 recites “means for comparing the sensed current signal to the reference signal, said comparing means generating a feedback signal.” The parties agree that this term is in means-plus-function format and that the function is “comparing the sensed current signal to the reference signal and generating a feedback signal.” Ex. 1 at 4; Ex. 2 at 5. The corresponding structure disclosed in the specification is “comparator 58; or the internal op-amp in PWM control IC 118 or 134.” Batarseh Decl. ¶¶ 76-80. The specification provides that the “comparator 58 provides the feedback signal by *comparing the sensed current signal* from current sensor 60 and *the reference signal* from reference current source 62.” Ex. 6 at col. 2:14-16 (emphases added); *see also id.* at figs. 1, 2A, 2B, 2C, 2D. The specification also states that the “first PWM control IC 118 varies the pulse width of the drive signal in response to a feedback signal from first op amp 120,” and that the “output of op amp 120 represents a scaled version of the first LED array 114 current, which is *compared to an internal reference* of the PWM control IC.” *Id.* at col. 3:23-35 (emphasis added). Thus, comparator 58 or the internal op-amp in PWM control IC 118 or 134 compare the sensed current signal to the reference signal and generate a feedback signal.

WAC identifies the corresponding structure as “[a] proportional type op-amp control circuit which generates a current error.” Ex. 2 at 5. WAC correctly identifies an op-amp as corresponding structure, but, contrary to the specification, unnecessarily limits it to “proportional type” op-amp. WAC also omits the alternative embodiment of comparator 58 disclosed by the specification. *See* Ex. 6 at figs. 2, 3, col. 2:14-16. In addition, the claim recites the function as

generating a “feedback signal,” not a “current error.” *See id.* at col. 2:14-16; Batarseh Decl. ¶ 79.

The feedback signal may represent a current error, but does not necessarily have to be a current error itself. Batarseh Decl. ¶ 79.

**4. “means for modulating pulse width responsive to the feedback signal, said pulse width modulating means generating a drive signal”**

Claim 7 recites “means for modulating pulse width responsive to the feedback signal, said pulse width modulating means generating a drive signal.” The parties agree that this term is in means-plus-function format and that the function is “modulating a pulse width responsive to the feedback signal and generating a drive signal.” The corresponding structure disclosed in the specification is “pulse width modulation (PWM) control IC 56, PWM control IC 118, or PWM control IC 134.” Batarseh Decl. ¶¶ 81-84. The specification states that the “PWM control IC 56 provides a high frequency periodic drive signal of varying pulse width to direct the power supply 52 to supply power as required by the LED array 54 *in response to a feedback signal.*” Ex. 6 at col. 2:4-13 (emphasis added). The specification also states that the “first PWM control IC 118 varies the pulse width of the drive signal *in response to a feedback signal* from first op amp 120.” *Id.* at col. 3:23-25 (emphasis added); *see also id.* at figs. 1, 2A, 2B, 2C, 2D, abstract, cols. 1:6-8, 1:60-65, 3:11-34, 3:55-56, 4:1-12, 4:33-53 (“The second transistor 142 also synchronizes the second PWM control IC 134 with the low frequency oscillator 144 as the low frequency oscillator 144 output switches from high to low, activating the second PWM control IC 134 and energizing the second LED array 126.”). Therefore, any one of PWM control ICs 56, 118, and 134 modulate a pulse width responsive to the feedback signal and generate a drive signal.

WAC identifies the structure as “an integrated controller having a square wave oscillating between 0 and 12 volts with a frequency of 20 kHz, 0 and 16 volts with a frequency of 200 to 300 Hertz, or between 0 and 600 mA with a frequency of 200 to 300 Hz.” Ex. 2 at 5. This

structure, however, improperly imports additional limitations from an embodiment in the specification. *See Acromed*, 253 F.3d at 1382-83 (refusing to incorporate aspects of the preferred embodiment that are unnecessary to perform the claimed function and stating that “[t]his court will not limit a patent to its preferred embodiments in the face of evidence of broader coverage by the claims”). Performing the recited function does not require “having a square wave oscillating between 0 and 12 volts with a frequency of 20 kHz,” “0 and 16 volts with a frequency of 200 to 300 Hertz,” or “between 0 and 600 mA with a frequency of 200 to 300 Hz.” Batarseh Decl. ¶ 84. These are merely exemplary operating modes, not structure, and thus may not be imported into the claims. *See Acromed*, 253 F.3d at 1382-83.

**5. “means for supplying power responsive to the drive signal, said power supplying means supplying current to the LED array”**

Claim 7 recites “means for supplying power responsive to the drive signal, said power supplying means supplying current to the LED array.” The parties agree that this term is in means-plus-function format and that the function is “supplying power responsive to the drive signal and supplying current to the LED array.” The corresponding structure disclosed in the specification is “a buck-boost, boost, buck, or flyback power supply.” Batarseh Decl. ¶¶ 85-88. The specification states that “power supply 52 can be a DC/DC converter such as a buck-boost power supply or other alternatives, such as a boost, buck, or flyback converter,” and that “power supply 52 supplies power for LED array 54.” Ex. 6 at col. 2:1-13; *see also id.* at figs. 1, 2A, 2B, 2C, 2D, abstract; Batarseh Decl. ¶ 86. Thus, a buck-boost, boost, buck, or flyback power supply corresponds to the claimed function of supplying power responsive to the drive signal and supplying current to the LED array.

WAC’s structure is not technically inaccurate, as it identifies a buck-boost, boost, buck, or flyback power supply, as well as two other alternatives, i.e., transistor Q1A, inductor L1A,

and diode D4A; or transistor Q1B, inductor L1B, and diode D4B. These elements, however, are superfluous since they are subsumed by Philips' proposed corresponding structure. Batarseh Decl. ¶ 88. A simpler construction is also more easily understood by the jury.

#### **F. U.S. Patent No. 6,788,011 (Mueller)**

The '011 patent (Ex. 7) is entitled "Multicolored LED Lighting Method and Apparatus." The '011 patent recognizes that "[i]t is well known that combining the projected light of one color with the projected light of another color will result in the creation of a third color," and that "the three most commonly used primary colors—red, blue and green—can be combined in different proportions to generate almost any color in the visible spectrum." Ex. 7 at col. 1:20-25. The '011 patent "takes advantage of these effects by combining the projected light from at least two light emitting diodes (LEDs) of different primary colors." *Id.* at col. 1:25-28. The at least two light emitting diodes may include a "first LED" and a "second LED," each having a different "spectrum." For example, one LED may be blue and the other LED may be red. The '011 patent discloses units that are "capable of receiving illumination color information on a computer lighting network." *Id.* at col. 2:29-34. Thus, a controller coupled to the first LED and the second LED may control an intensity of the "first LED" and an intensity of the "second LED" in response to a signal received by the controller.

##### **1. "second LED"**

Claims 93, 122, 127, and 130 of the '011 patent recite a "second LED," which one of ordinary skill in the art at the time of the invention would have understood to mean "a second light emitting diode." Zane Decl.<sup>8</sup> ¶¶ 15-16. This construction is consistent with the parties' agreed construction for "first LED," which is a "first light emitting diode," and is supported by

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<sup>8</sup> "Zane Decl." refers to the Declaration of Dr. Regan Zane in Support of Philips' Opening Claim Construction Brief, which is being filed concurrently herewith.

the specification, which describes at least two light emitting diodes: “The present invention takes advantage of these effects by combining the projected light from at least two light emitting diodes (LEDs) of different primary colors.” Ex. 7 at col. 1:25-28; *see also id.* at fig. 1, col. 3:24-26 (“LED set 120 contains red LEDs, set 140 contains blue and set 160 contains green, each obtainable from the Nichia America Corporation.”).

WAC’s proposed construction of “second LED” is “a light emitting diode separate and distinct from the first LED.” Ex. 2 at 6. The phrase “separate and distinct” should be rejected because it may be misinterpreted as narrowing the scope of the claims to exclude embodiments where the first and second LEDs are physically or electrically connected, which would be inconsistent with the ’011 patent. Zane Decl. ¶ 16. For example, Figure 1 (shown below) discloses three LEDs of different colors, 120, 140, 160, that are electrically connected to one another, and Figure 4 (also shown below) depicts LEDs of different colors, 120, 140, 160, physically grouped together. *Id.*

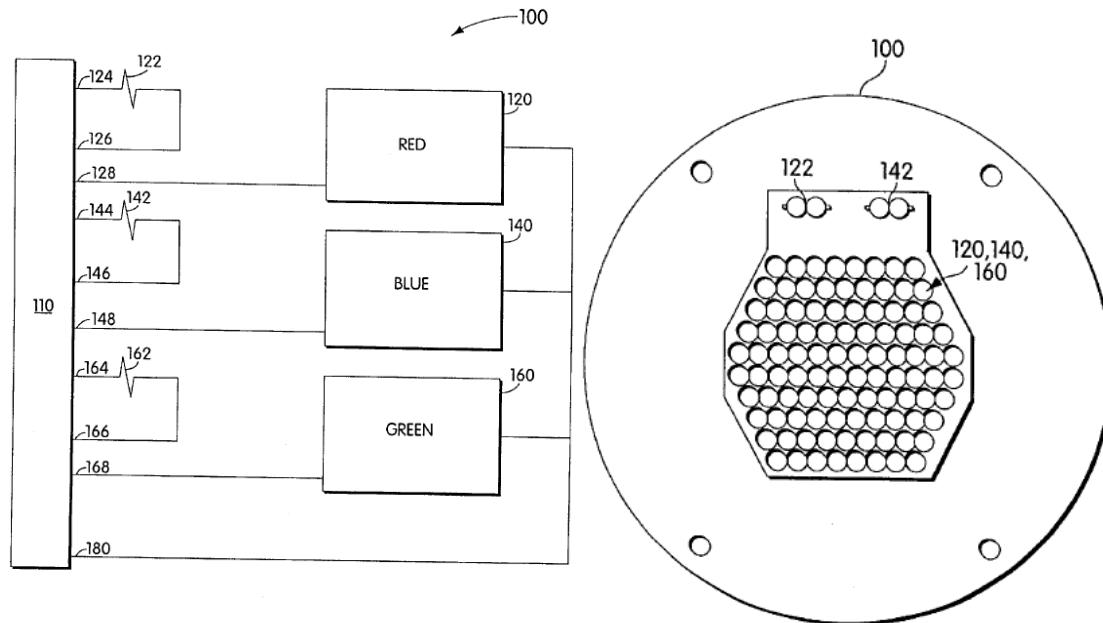


Fig. 1

Fig. 4

WAC's proposed construction must be rejected because it would exclude these embodiments.

*See MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007)

(rejecting limitations on claims that excluded embodiments disclosed in the specification). The proper construction of "second LED" therefore should encompass "separate and distinct" LEDs, but also LEDs that are physically and electrically connected. WAC's attempt to rewrite the claim as "a second, separate and distinct, LED" should be rejected.

## **2. "first radiation"**

Claims 93, 122, and 130 recite "first radiation," which should be construed to mean "a first emission of electromagnetic energy." The term "radiation" is a standard term of art, which the McGraw-Hill Dictionary of Scientific and Technical Terms (Ex. 13, "McGraw-Hill Dictionary") defines as "energy transmitted by waves through space or some medium," which, when unqualified, "usually refers to electromagnetic radiation." Ex. 13 at 1634; Zane Decl. ¶ 17.

The language of the claims as a whole and the specification confirm that "first radiation" means "a first emission of electromagnetic energy." One of ordinary skill in the art would have known that the term "first radiation" is used in the asserted claims with reference to the "first LED," and in the context of LEDs (i.e., *light emitting* diodes), electromagnetic energy is emitted in the form of light. *See* Ex. 13, McGraw-Hill Dictionary at 1136 ("light" is "[e]lectromagnetic radiation with wavelengths capable of causing the sensation of vision," or more generally, "[e]lectromagnetic radiation of any wavelength"); Zane Decl. ¶¶ 17-19. Consistent with this understanding, the written description of the '011 patent supports the construction because it discloses LEDs that "project[] light." Ex. 7 at col. 1:25-28; *see also id.* at col. 1:13-16 ("The present invention relates to providing light of a selectable color using LEDs. More particularly, the present invention is a method and apparatus for providing multicolored illumination.").

WAC does not propose a construction for “first radiation.” Instead, WAC argues that the term is “indefinite” and a “construction is not possible.” Ex. 2 at 6. WAC’s “indefiniteness” argument is meritless for the reasons above. *See supra* Part III.A. Philips’ proposed construction is consistent with the understanding of those of ordinary skill in the art, with a technical dictionary, and with the ’011 patent’s disclosure. Philips’ proposed construction also confirms that a construction is possible.

### **3. “second radiation”**

The term “second radiation” recited in claims 93, 122, and 130 should be construed to mean “a second emission of electromagnetic energy.” For the reasons stated above for “first radiation,” this construction comports with the understanding of one of ordinary skill in the art at the time of the invention and with the dictionary definition of “radiation.” Zane Decl. ¶¶ 20-22. The language of the claims as a whole and the specification confirm that “second radiation” means “a second emission of electromagnetic energy.” *Id.* ¶ 21. One of ordinary skill at the time of the invention would have known that the term “second radiation” is used in the asserted claims with reference to the “second LED,” and in the context of LEDs (i.e., *light emitting diodes*), electromagnetic energy is emitted in the form of light. *Id.* Indeed, “light” is “[e]lectromagnetic radiation with wavelengths capable of causing the sensation of vision,” or more generally, “[e]lectromagnetic radiation of any wavelength.” Ex. 13, McGraw-Hill Dictionary at 1136.

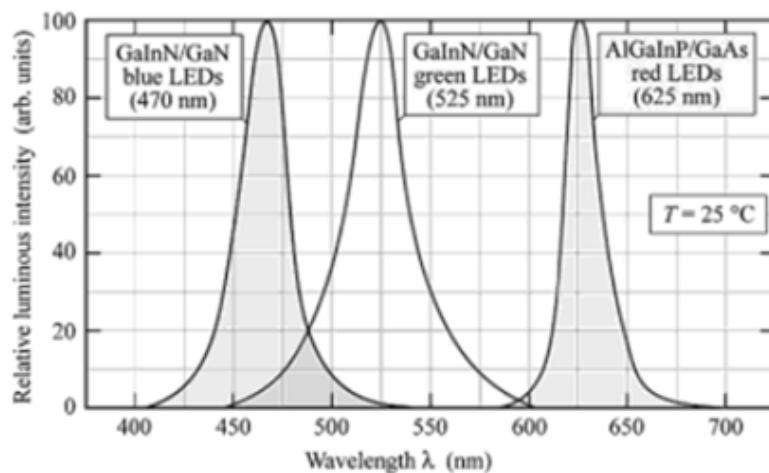
Like “first radiation,” WAC does not propose a competing construction for “second radiation.” Instead, WAC argues that the term is “indefinite” and “construction is not possible.” Ex. 2 at 6. Philips, however, has proposed a construction for this standard term of art that is consistent with the understanding of those of ordinary skill in the art, with a technical dictionary,

and with the '011 patent's disclosure. WAC's "indefiniteness" should be rejected. *See supra* Part III.A.

#### 4. "first spectrum"

Claims 93, 122, and 130 recite "first spectrum," which should be construed to mean "an intensity of the first radiation as a function of wavelength." This term is a standard term of art, and the McGraw-Hill Dictionary defines "spectrum" as "[a] display or plot of intensity of radiation (particles, photons, or acoustic radiation) as a function of mass, momentum, wavelength, frequency, or some related quantity." Ex. 13 at 1881. Philips' proposed construction is consistent with this definition. In the context of LED lighting, those of ordinary skill in the art would have understood the term "spectrum" to relate to intensity as a function of wavelength or frequency (the inverse of wavelength). Zane Decl. ¶¶ 23-27.

One example of a spectrum is depicted below. Such plots were well understood and recognized by those of skill in the art at the time of the invention. *Id.* ¶ 24. The shape and position of the curve in the plot defines the color of the emitted light. *Id.* For example, an LED that has an intensity curve that lies primarily within the blue wavelengths will appear blue. *Id.*



Ex. 14, E. Fred Schubert, Light-Emitting Diodes, fig. 12.16 (2d ed. June 19, 2006).

The specification also supports Philips' construction because it discloses LEDs that emit light (i.e., electromagnetic energy) having a certain color (i.e., having a certain spectrum). *See, e.g.*, Ex. 7 at col. 3:24-25 ("LED set 120 contains red LEDs, set 140 contains blue and set 160 contains green . . ."). In addition, the colors of the individual LEDs can be mixed to create a different color:

It is well known that combining the projected light of one color with the projected light of another color will result in the creation of a third color. It is also well known that the three most commonly used primary colors—red, blue and green—can be combined in different proportions to generate almost any color in the visible spectrum. The present invention takes advantage of these effects by combining the projected light from at least two light emitting diodes (LEDs) of different primary colors.

*Id.* at col. 1:20-28.

WAC construes "first spectrum" as "a first visible spectrum between 400 and 700 nm." Ex. 2 at 6. The claim language and specification, however, never limit the LED such that it is incapable of emitting radiation at a wavelength beyond the visible spectrum. Zane Decl. ¶ 26. A light source can emit light at wavelengths that are mostly within the visible spectrum, but which tail off into the ultraviolet range (i.e., beyond approximately 400 nm) or the infrared range (i.e., beyond approximately 700 nm). *Id.* ¶¶ 26-27. Therefore, although the wavelengths of electromagnetic energy emitted by an LED may be concentrated and define a color within the visible spectrum, the claim language does not require that the wavelengths lie *only* "between 400 and 700 nm." *Id.* Instead of construing a "first spectrum," WAC rewrote the claim language to be a "first visible spectrum between 400 and 700 nm." *See Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1327-28 (Fed. Cir. 2002) (rejecting restriction on claim term that was not recited in claim, required by prosecution history or specification, or required by term's plain meaning).

### **5. “second spectrum”**

Claims 93, 122, and 130 recite the term “second spectrum,” which should be construed to mean “an intensity of the second radiation as a function of wavelength.” The specification supports Philips’ construction. As explained above, the specification discloses one or more LEDs, each of which emit light (i.e., electromagnetic energy) having a certain color (i.e., having a certain spectrum). Ex. 7 at col. 1:20-28. Zane Decl. ¶¶ 28-31. For the reasons above for “first spectrum,” this construction also comports with the understanding of one of ordinary skill in the art and the dictionary definition of “spectrum.” *Id.* ¶ 28.

WAC construes “second spectrum” as a “spectrum that is different from the first spectrum” (Ex. 2 at 6), but a construction that prevents the second spectrum from overlapping in any way with the first spectrum (i.e., the first spectrum is within the visible range and the second spectrum is entirely outside of the visible range) is inconsistent with the ’011 patent, which discloses multiple LEDs emitting colors in the visible range. Zane Decl. ¶¶ 30-31; Ex. 7 at col. 1:20-28 (discussing LEDs of “different primary colors”). Indeed, a claim construction that does not encompass any disclosed embodiment is “rarely, if ever, correct and would require highly persuasive evidentiary support.” *Johns Hopkins Univ. v. CellPro, Inc.*, 152 F.3d 1342, 1355 (Fed. Cir. 1998) (citation omitted). Moreover, one of ordinary skill in the art would understand that the “first spectrum” and the “second spectrum” can overlap and still be different. Zane Decl. ¶¶ 30-31. An example of a first spectrum and a second spectrum that overlap but are still different is shown in Figure 12.16 of Ex. 14 (shown above), and similar plots were well understood and recognized by those of skill in the art at the time of the invention. *Id.* ¶ 31.

### **6. “at least in part”**

Claims 93, 95, 96, 122, 123, 127, and 130 recite “at least in part,” which is a standard phrase that means “at minimum partially.” By way of example, claim 93 recites “controlling at

least the first intensity and the second intensity based at least in part on the lighting information.”

One of ordinary skill in the art would have understood “at least in part” in this phrase to mean that the actual intensities of the first and second LEDs may be controlled based on the lighting information, such as the desired LED intensities, but that they are not precluded from being controlled based on other parameters. The written description supports this construction because it discloses controlling actual LED intensities based on desired LED intensities, *see, e.g.*, Ex. 7 at col. 6:6-24, without foreclosing the use of additional parameters.

WAC does not propose a construction for “at least in part.” Instead, WAC argues that the term is “indefinite” and “construction is not possible.” Ex. 2 at 6. “At least in part” is basic English that those of ordinary skill in the art, and even a layperson, would understand. WAC’s “indefiniteness” argument is meritless. *See supra* Part III.A.

#### **7. “lighting information”**

Claims 93, 95, 122, and 133 recite “lighting information,” which should be construed as “data that provides intensity and/or color information.” This construction is supported by the specification and comports with the understanding of persons of ordinary skill in the art at the time of the invention. Zane Decl. ¶¶ 32-35. For example, the ’011 disclosure describes a signal that includes information regarding intensity:

Basically, in the network protocol used herein, a central controller creates a stream of network data consisting of sequential data packets. Each packet first contains a header, which is checked for conformance to the standard and discarded, followed by a stream of sequential bytes representing data for sequentially addressed devices. . . . Each byte corresponds to a decimal number 0 to 255, linearly representing the desired *intensity* from Off to Full. . . . This way, each of the three LED colors is assigned a discrete *intensity* value between 0 and 255. These respective *intensity* values are stored in respective registers within the memory of microcontroller IC2 400 (not shown).

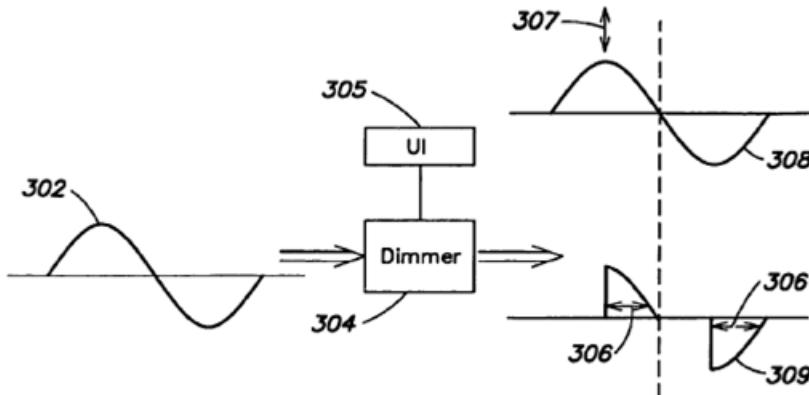
Ex. 7 at col. 6:4-24 (emphases added).

The disclosure also describes a signal that includes color information: “the invention herein comprises a pulse width modulated current control for an LED lighting assembly, where each current-controlled unit is uniquely addressable and capable of receiving *illumination color information* on a computer lighting network.” *Id.* at col. 2:30-34 (emphasis added). Thus, the disclosure describes signals including data that provides intensity and/or color information, consistent with Philips’ proposed construction.

WAC does not propose a construction for “lighting information.” Instead, WAC argues that the term is “indefinite” and “construction is not possible.” Ex. 2 at 6. WAC’s “indefiniteness” argument is meritless. *See supra* Part III.A. The term “lighting information” is a straightforward term that would have been understood by those of ordinary skill in the art, and Philips’ construction shows that construction is possible. Zane Decl. ¶ 35. Philips’ construction is consistent with the understanding of those of ordinary skill in the art and is supported by the specification, which describes specific lighting parameters (i.e., intensity and/or color information) that may be included in the claimed “at least one signal.” *Id.*

#### **G. U.S. Patent Nos. 7,038,399 and 7,352,138 (Lys)**

The ’399 patent (Ex. 8) and the related ’138 patent (Ex. 9) describe electronic circuitry for powering LEDs via conventional alternating current (“A.C.”) dimmer switches. Conventional dimmer A.C. switches operate by transforming standard A.C. line voltages (e.g., 120 volts at 60 Hz in the United States, or 220 volts at 50 Hz in Europe) to a different waveform to control the intensity of light. For example, Figure 1 of the ’399 and ’138 patents (reproduced below) shows how a conventional A.C. dimmer switch takes a standard line voltage 302 and transforms it into a different waveform (i.e., a signal other than a standard A.C. line voltage), which might have a varying amplitude 307 such as waveform 308 or a varying duty cycle 306 such as waveform 309.



Exs. 8 at fig. 1.<sup>9</sup>

Although conventional dimmer switches can control the intensity of incandescent lights without the incandescent light requiring any special circuitry, LEDs operate differently such that special circuitry is required to dim LEDs with conventional dimmer switches. The '399 and '138 patents disclose novel circuitry that is able to control the intensity of LEDs when supplied with the types of signals that come from conventional dimmer switches (i.e., signals other than a standard A.C. line voltage). Here, the parties do not dispute the meaning of any of the claim terms associated with the special circuitry; rather, the parties dispute an aspect of the claim related to the type of signal received from the power source.

### **1. “signals other than a standard A.C. line voltage”**

Claims 7, 17, and 34 of the '399 patent and claim 1 of the '138 patent recite “signals other than a standard A.C. line voltage.” This term means “signals other than a single sinusoidal wave at a fixed frequency and a fixed amplitude.” A person of ordinary skill in the art at the time of the invention would have understood the meaning of “standard A.C. line voltage” as “a single sinusoidal wave at a fixed frequency and a fixed amplitude,” which the specifications of the '399 and '138 patents support. Batarseh Decl. ¶¶ 93-96. Figure 1 shows “an example of an A.C.

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<sup>9</sup> The specifications of the '399 and '138 patents are substantially the same. Accordingly, citations herein are to the '399 patent only.

voltage waveform (e.g., representing a standard line voltage)” as a single sinusoidal wave. Ex. 8 at fig. 1 (“A.C. voltage waveform 302”), col. 2:17-21. Figure 1 also shows signals output from an A.C. dimmer 304 that may adjust, for example, the amplitude 307 or duty cycle 306 of that waveform. Ex. 8 at col. 2:21-29. The specification also describes the input and output signals of conventional A.C. dimmers used for lighting systems:

Many lighting systems for general interior or exterior illumination often are powered by an A.C. source, commonly referred to as a “line voltage” (e.g., 120 Volts RMS at 60 Hz, 220 Volts RMS at 50 Hz). A conventional A.C. dimmer typically receives the A.C. line voltage as an input, and provides an A.C. signal output having one or more variable parameters that have the effect of adjusting the average voltage of the output signal (and hence the capability of the A.C. output signal to deliver power) in response to user operation of the dimmer.

Ex. 8 at col. 1:50-59.

WAC does not propose a construction for “signals other than a standard A.C. line voltage.” Instead, WAC argues that the term is “indefinite” and “construction is not possible.” Ex. 2 at 6. WAC’s “indefiniteness” argument is meritless. *See supra* Part III.A. This standard term of art is straightforward and would be understood by those of ordinary skill in the art in light of the explicit disclosure in the specification of the ’399 and ’138 patents, which, as explained above, describes an exemplary standard A.C. line voltage and exemplary embodiments of signals other than standard A.C. line voltage. *See* Ex. 8 at fig. 1, cols. 1:50-59, 2:17-29; Batarseh Decl. ¶¶ 94, 95.

#### IV. CONCLUSION

Philips respectfully requests that the court adopt its constructions and reject WAC’s constructions and its indefiniteness arguments.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I certify that this document filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF), and paper copies will be sent to those indicated as nonregistered participants on February 20, 2015.

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